

## Individual Impact

### Situation:

Older adults and children alike use your solution.

### Reflection:

This situation challenges the assumption that TUMApply is used exclusively by digitally confident adults in a narrow age range. In reality, older applicants (e.g. career switchers, late-stage academics) may use the platform independently, while younger users (e.g. prospective students exploring doctoral pathways early) may access information with limited academic or digital literacy.

For TUMApply, this affects core areas such as navigation clarity, language complexity, and interaction density. Older users may experience difficulties with small text, complex multi-step flows, or hidden interactions, while younger users may struggle with academic terminology, legal language, and implicit expectations.

### Risks Identified:

- Cognitive overload due to dense information and academic jargon
- Accessibility barriers related to font size, contrast, and interaction complexity
- Exclusion of users who rely on guidance rather than exploration

### Design Response / Mitigation:

- Plain-language explanations for all procedural steps, avoiding unnecessary academic jargon
- Accessibility-first design (WCAG-compliant typography, scalable text, clear hierarchy)
- Optional guided questionnaire that adapts content depth to the user's needs

## Social Impact

### Situation:

Women and people of marginalized genders feel represented and visible in your solution.

### Reflection:

This situation invites reflection on how representation is embedded not only visually, but structurally. For TUMApply, visibility goes beyond imagery and language; it directly affects how fair, transparent, and trustworthy the application process feels to underrepresented genders.

The risk is that representation becomes symbolic rather than systemic. If inclusive language is present but evaluation processes remain opaque or biased, the platform may unintentionally reproduce the very inequalities it seeks to address.

### Risks Identified:

- Reinforcement of bias through informal evaluation practices
- Reduced trust if inclusivity is perceived as performative

### Design Response / Mitigation:

- Anonymized early-stage review, removing names
- Randomized application order to reduce unconscious prioritization
- Standardized evaluation criteria, applied consistently across departments
- Visibility of mentoring, DEI programs, and support resources throughout the journey

## Environmental Impact

### Situation:

High energy demand is required by your solution and makes operation environmentally intensive.

### Reflection:

This situation raises a critical tension between automation, scalability, and sustainability. TUMApply relies on digital infrastructure, data storage, and automated workflows, all of which consume energy. This is particularly the case if features such as recommendation systems or AI-based assistance are introduced.

The platform must therefore justify energy use by replacing more resource-intensive alternatives rather than adding an additional layer of consumption.

### Risks Identified:

- Increased server load through unnecessary automation
- Over-engineering features with low user value
- Contradiction between sustainability goals and technical implementation

### Design Response / Mitigation:

- Replacing paper-heavy and email-based processes, reducing printing, scanning, and physical transport
- Selective automation: prioritizing administrative workflows with clear efficiency gains
- Careful evaluation of AI features (e.g. chatbot as optional, limited-scope support tool)
- Emphasis on long-term reuse of content (recorded info sessions, shared Q&A knowledge base)

## Individual Impact

### Situation:

A group of users finds it challenging to understand how your solution works.

### Reflection:

This situation directly addresses a core risk in the doctoral application ecosystem: procedural opacity. For TUMApply, this group includes applicants who lack prior academic exposure, are unfamiliar with German university structures, or do not possess informal insider knowledge about doctoral admissions.

If users struggle to understand how the platform works, the system may unintentionally reproduce existing inequalities. Complexity or ambiguity is often internalized by applicants as personal inadequacy rather than as a design flaw, leading to disengagement or self-selection out of the process.

### Risks Identified:

- Cognitive overload caused by dense information and unclear structure
- Applicants misinterpreting requirements or missing critical steps
- Reinforcement of privilege for users already familiar with academic systems

### Design Response / Mitigation:

- Step-by-step process visualization aligned with the systemic journey map
- Plain-language explanations of requirements, deadlines, and evaluation stages
- Progressive guidance, where essential information is shown first and details are revealed on demand
- Optional newsletter that directs users to relevant content without enforcing a fixed path

## Social Impact

### Situation:

The introduction of your solution leads to changes in children's behavior and learning patterns.

### Reflection:

Although TUMApply is designed for doctoral applicants, this situation prompts reflection on long-term and indirect social effects. By increasing transparency and accessibility in doctoral education, the platform may influence how younger generations perceive academic pathways, particularly children from non-academic or underrepresented backgrounds.

If doctoral careers become more visible, structured, and understandable, academic trajectories may appear less exclusive and intimidating. This could contribute to earlier interest in research careers and reduce the perception that academia is reserved for a narrow elite.

### Risks Identified:

- Over-promising accessibility without addressing systemic barriers beyond the platform
- Simplification that hides the complexity and demands of academic careers
- Reinforcing the idea that success is purely procedural rather than structural

### Design Response / Mitigation:

- Clear communication that TUMApply supports access but does not guarantee outcomes
- Educational content that explains academic pathways realistically, including challenges
- Publicly accessible resources (recorded info sessions, Q&A archives) that demystify doctoral education for broader audiences

## Environmental Impact

### Situation:

An environmental impact assessment must be completed before release or publication.

### Reflection:

This situation reframes sustainability as a formal design constraint rather than a secondary consideration. For TUMApply, such an assessment would require evaluating whether the platform's environmental costs are justified by its benefits.

While digital systems consume energy through hosting, data transfer, and automation, TUMApply's purpose is to replace fragmented, paper-heavy, and travel-intensive processes. The key question becomes whether the platform meaningfully reduces overall resource consumption across the doctoral application lifecycle.

### Risks Identified:

- Increased digital energy use without sufficient offset
- Feature creep (e.g. unnecessary automation or AI tools)
- Sustainability claims that are not backed by measurable impact

### Design Response / Mitigation:

- Prioritizing process replacement, not addition (e.g. fewer PDFs, emails, in-person administrative visits)
- Selective automation focused on high-impact administrative workflows
- Avoiding always-on AI features; treating tools like chatbots as optional and scoped
- Designing content for reuse and longevity (e.g. recorded sessions instead of repeated live events)

## Individual Impact

### Situation:

A person who recently relocated and is still learning the local language uses your solution.

### Reflection:

This situation is highly relevant for TUMApply, as international applicants and recently relocated researchers form a significant portion of doctoral candidates at TUM. These users often navigate unfamiliar academic structures while simultaneously overcoming language barriers, increasing cognitive load and uncertainty.

If TUMApply relies heavily on complex academic language, long textual explanations, or untranslated institutional terminology, these users may struggle to understand requirements, miss deadlines, or misinterpret evaluation criteria. This can reinforce exclusion by favoring applicants with native-level language skills or prior exposure to the German academic system.

### Risks Identified:

- Misunderstanding of application steps and legal requirements
- Increased dependency on external help or informal networks
- Higher likelihood of errors leading to rejection or delays

### Design Response / Mitigation:

- Multilingual interface support for core content and navigation
- Plain-language explanations that avoid academic jargon where possible
- Visual step indicators and icons to support comprehension independent of language
- Early visibility of visa, residence, and legal requirements aligned with application stages

## Social Impact

### Situation:

Stereotypes and exclusionary design patterns are evident in your solution.

### Reflection:

This situation directly challenges the ethical responsibility of TUMApply. Doctoral application systems often implicitly reflect the norms and expectations of historically dominant groups, reinforcing stereotypes around who “belongs” in academia. If TUMApply were to visually, structurally, or linguistically center a narrow user profile, it could unintentionally reproduce exclusion.

Examples include gendered language, imagery representing only a specific demographic, or workflows that assume uninterrupted academic careers and insider knowledge. Such patterns can discourage underrepresented groups and undermine trust in the system's fairness.

### Risks Identified:

- Reinforcement of implicit bias in perception and evaluation
- Reduced sense of belonging for marginalized applicants
- Erosion of the platform's credibility as an inclusive service

### Design Response / Mitigation:

- Inclusive language guidelines applied across all content
- Diverse and non-stereotypical representation in visuals and examples
- Anonymized early-stage application review to counter bias
- Structured, criteria-based evaluation processes that reduce subjective judgment

## Environmental Impact

### Situation:

Rapidly changing trends shorten product lifecycles and reduce longevity of your solution.

### Reflection:

This situation highlights the tension between digital innovation and sustainability. If TUMApply were designed primarily around short-lived trends, frequent redesigns, or feature-driven novelty, it could require continuous redevelopment, increasing energy consumption and resource use over time.

Given its institutional role, TUMApply should prioritize long-term stability and adaptability rather than constant reinvention. A sustainable digital service in this context is one that evolves gradually, remains usable over many years, and reduces the need for repeated system replacements.

### Risks Identified:

- High maintenance costs and frequent redesign cycles
- Increased energy consumption due to unnecessary complexity
- Loss of institutional trust if the system becomes unstable or outdated quickly

### Design Response / Mitigation:

- Modular and scalable architecture allowing incremental updates
- Focus on durable core features instead of trend-driven add-ons
- Reusable content formats (e.g. recorded info sessions, evergreen guidance)
- Conscious evaluation of new technologies (e.g. AI tools) based on long-term value, not novelty

## Individual Impact

### Situation:

A user misses a subscription cancellation, and your solution continues to charge them.

### Reflection:

This situation highlights risks related to financial transparency and user control. While TUMApply is not a subscription-based service, reflecting on this card is still valuable because it draws attention to power imbalances between institutions and applicants.

Applicants are often in vulnerable positions, dependent on institutional systems and unclear processes. If any hidden costs, unclear commitments, or unexpected obligations existed in the system, this could seriously undermine trust. Even non-monetary “costs,” such as time, data usage, or procedural obligations, must be clearly communicated.

### Risks Identified:

- Loss of trust due to perceived lack of transparency
- Users feeling trapped in processes they do not fully control
- Reinforcement of institutional power over applicants

### Design Response / Mitigation:

- Explicit confirmation steps for any binding action (e.g. submission, forwarding to authorities)
- Clear communication that TUMApply is free of charge for applicants
- Transparent data-use explanations and opt-in mechanisms
- Easy access to account deletion and data withdrawal options

## Social Impact

### Situation:

Local laws prohibit data storage in the country where your solution is implemented.

### Reflection:

This situation is highly relevant for TUMApply, as it handles sensitive personal and academic data. Doctoral applications involve documents such as CVs, transcripts, and legal information that are subject to strict data protection laws.

If local or international regulations restrict where data may be stored or processed, TUMApply must ensure compliance without disadvantaging certain applicant groups. Failure to do so could exclude international applicants or create unequal access depending on nationality or residence.

### Risks Identified:

- Legal non-compliance leading to system restrictions
- Unequal access for applicants from certain regions
- Reduced trust in the institution's handling of personal data

### Design Response / Mitigation:

- Data minimization: collect only strictly necessary information
- Region-aware data storage and processing strategies
- Clear communication about where and how data is stored
- Separation of evaluation data from legal and administrative data

## Environmental Impact

### Situation:

Environmental regulations require testing for potential ecological harm before implementation.

### Reflection:

Although TUMApply is a digital service, this card highlights that digital systems are not environmentally neutral. Server infrastructure, data processing, and long-term system maintenance all contribute to environmental impact.

Testing for ecological harm encourages reflection on whether the system is designed efficiently and responsibly. For TUMApply, this means evaluating whether features genuinely reduce resource use (e.g. paper-based workflows, travel) rather than introducing unnecessary complexity or energy-intensive technologies.

### Risks Identified:

- Hidden environmental costs of digital infrastructure
- Overengineering leading to increased energy consumption
- Adoption of high-impact technologies without clear benefit

### Design Response / Mitigation:

- Prioritization of paperless workflows to reduce physical resource use
- Long-lived system design to avoid frequent rebuilds
- Careful evaluation of AI or automation features based on real impact
- Preference for institutional reuse over parallel systems